



Wyoming Department of Agriculture

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Dave Freudenthal, Governor

John Etchepare, Director

MEMORANDUM

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TO: Wyoming Conservation Districts
FROM: Ryan Lance, Governor's Office
Bobbie Frank, Wyoming Association of Conservation Districts
Grant Stumbough, Wyoming Department of Agriculture
SUBJECT: Solar Stock Water Pumps
DATE: March 21, 2005

Wyoming is emerging on its fifth year of drought and water supplies remain inadequate in many regions of the state. Many scientists are predicting that drought may continue into the next decade, creating even greater reductions in water levels. Dr. Sadrul Ula, Energy Advisor with Governor Freudenthal's Office, has been working on a potential technological solution in providing water to both livestock and wildlife in remote areas (see attached project proposal). He has teamed up with the Wyoming Department of Agriculture (WDA), Wyoming Association of Conservation Districts (WACD), University of Wyoming, Wyoming Business Council and others to assist producers in dealing with the drought.

With help from participating Conservation Districts, Dr. Ula's plan is to make small scale solar photo-voltaic (solar panels) and wind electric shock water pumping systems available to producers in all 23 counties in Wyoming. The initiative will be conducted in two phases to provide additional time for producers to apply and to fine tune the program. Both public and private lands will be considered for program application. Conservation Districts are fully aware of the benefits of water developments during drought as well as normal precipitation years. Livestock and wildlife distribution on rangelands can be vastly improved with off-stream watering facilities resulting in improved rangeland health and habitat conditions. In several areas of the state, water is needed just to sustain livestock herds. Water is one of the most valuable resources in Wyoming and we must be prepared to capture and store as much water as possible.

We are asking that each Conservation District work with their County Commissioners, University of Wyoming Extension Agents, Wyoming Rural Electric Association, agricultural organizations and other affected entities to select interested producers in your county to participate in the initiative. Districts may want to organize local selection committees consisting of the above groups to ensure a fair and unbiased process. After the selection process is complete, the University of Wyoming in coordination with the Governor's Office will make solar stock pumping systems available to participating producers.

The Governor has allocated a total of \$500,000 for this initiative. Funds will be used to purchase solar panels, pumps, and wiring hardware to help offset new technology costs. Producers will be asked to provide in-kind match to include construction of concrete pads, well drilling costs, fencing materials, maintenance costs, and other materials to complete the project. Use of matching dollars from Bill Programs (EQIP, WHIP, CIG), EPA grants, and other funding sources is strongly encouraged to stretch program dollars. In addition, Steve Fletcher, University of

The Wyoming Department of Agriculture

is dedicated to the promotion and enhancement of Wyoming's agriculture, natural resources and quality of life.

Wyoming Electric Motor Training and Testing Center, will be available statewide to design, install, and monitor the solar pumping units. Systems may be used for water well applications, pumping water out of streams and reservoirs to nearby storage tanks, and other appropriate applications that benefit wildlife habitat and improve livestock distribution. Each participating producer must also agree to work with the University of Wyoming to showcase their working system for a two year period to educate other producers and the general public about this type of technology. Districts are encouraged to work with the University on this effort. After two years, the producer will own the solar pumping system. Conservation Districts will not have to administer funds, negotiate contracts, accept program liability, or track in-kind match as this will be the responsibility of the University of Wyoming. Basically, we are asking districts to help promote the program, rank applications, and then select producers to participate.

Press releases will be distributed by the Governor's Office, WDA, WACD and various agricultural organizations to inform the general public about this initiative. The Governor plans to make a public announcement and issue a press release on March 30, 2005. We strongly encourage Conservation Districts to also solicit participation by talking with their local producers. Also a questionnaire prepared by Dr. Ula has been attached for distribution to individual producers who are interested in participating. Furthermore, we have attached a ranking criteria sheet to assist Conservation Districts in making selections where a large number of producers may have applied. The ranking criteria is just an example and can be done in many different ways.

We ask that Conservation District make their final selection for the first phase by April 22, 2005 and final selection for the second phase by June 10, 2005. As per Dr. Ula's proposal, at least 2 producers may be selected per county and up to 4 producers may be selected in larger counties with a large number of quality applicants. We also request that Districts work together in selecting producers in multi-district counties. We ask Districts to then submit those names to the Governor's office for final approval by the above deadline. We realize this does not give us much time, but it should be a fairly simple process and feel free to call upon Dr. Sadrul Ula at 307-777-6924, Ryan Lance at 307-777-5774, Bobbie Frank at 307-632-5716, or Grant Stumbough at 307-777-6579 for help or to further explain the program.

We appreciate your willingness to assist in promoting this new technology to help safeguard our industry during times of drought. Thank you for your cooperation!

cc

Ken Hamilton, WFBF
Jim Magagna, WSGA
Bryce Reece, WWGA
Scott Zimmerman, RMFU
Dick Loper, WSGB
Dr. Frank Galey, U.W.
Tucker Fagen, WBC
Shawn Taylor, Wyoming Rural Electric Association



Solar and Wind Electric Powered Stock Water Pumping Initiative

According to the State Climatologist Jan Curtis, "Wyoming's current drought, now in its fifth year, is beginning to look like past droughts that lasted 10 to 15 years, most recently in the 1950s." Drought impacts the surface water right away, while it takes much longer to impact the underground aquifers. The relatively new technology of solar PV power could be used to pump underground water in isolated ranches and farms when surface water dries up.

Many of the remote stock water pumps throughout the state are served through long and expensive power distribution lines that produce very little revenue; some times not enough to even cover the maintenance cost of the line. As livestock don't venture too far from water sources, more watering locations are needed for the proper utilization of the range. But remote service line extension costs about \$15,000 to \$20,000 per mile in Wyoming, thereby forcing many ranchers to truck water or use small diesel or propane engines. These engines not only are noisy and cause air pollutions, they also require the rancher frequent trips even in bad weather to start and stop the engines. Solar stock water pumping will be a cost effective and environmentally beneficial solution in these remote applications. The relative newness of the technology and the initial cost of the pumping systems are the main hindrance of the penetration of this technology into the market place.

Governor Dave Freudenthal has allocated \$500,000 for this initiative which will help overcome the newness of the technology. Each participating rancher will also agree to showcase their working system to other ranchers and the general public for further dissemination of knowledge for two years.

Attached is a questionnaire to be given to individual ranchers. After publicizing and distributing this questionnaire, the Wyoming Association of Conservation Districts in cooperation with their local electric utilities, county extension agents, and ranching organizations, using this information, will select the best locations for installation of the systems. Design, installation and monitoring of the systems will be conducted by the University of Wyoming Electric Motor Training & Testing Center, Room 1096 Engineering Building, 1000 University Ave, Laramie, WY; phone 307-766-5149, maddux31@uwyo.edu.



Solar and Wind Electric Powered Stock Water Pumping Initiative

Name _____ Date _____

Address _____

Phone _____ Email _____

Livestock Type _____ Number _____

Daily Pumping Requirements

January _____ gpd May _____ gpd September _____ gpd

February _____ gpd June _____ gpd October _____ gpd

March _____ gpd July _____ gpd November _____ gpd

April _____ gpd August _____ gpd December _____ gpd

Well Number 1 Information

Ground Level to Pump _____ ft Well Head to Top Storage Tank or Outlet Pipe _____

Ground Level to Water Surface _____ ft Vertical _____ ft Horizontal _____ ft

Ground Level to Draw Down Level _____ ft Well Casing Inside Diameter _____ in

Well Recovery/Recharge _____ Distance from Power Line _____ mi

Continuous Flow Rate _____ gpm Distance from Paved Road _____ mi

Land Ownership Type Private _____ State _____ Federal _____

Well Number 2 Information

Ground Level to Pump _____ ft Well Head to Top Storage Tank or Outlet Pipe _____

Ground Level to Water Surface _____ ft Vertical _____ ft Horizontal _____ ft

Ground Level to Draw Down Level _____ ft Well Casing Inside Diameter _____ in

Well Recovery/Recharge _____ Distance from Power Line _____ mi

Continuous Flow Rate _____ gpm Distance from Paved Road _____ mi

Land Ownership Type Private _____ State _____ Federal _____

Additional Information

TO BE FILLED OUT BY THE PRODUCER

Please answer the following questions about your proposed project. Each answer will be given a score by the selection committee based upon how well the project meets the following criteria. You may use additional space if needed.

- 1) Does the proposed project improve livestock distribution? Explain: (15 pts. possible)

- 2) Does the project provide off stream water for livestock to reduce grazing on riparian areas? Explain: (15 pts possible)

- 3) Is water development part of a planned grazing system? Explain: (15 pts possible)

- 4) Does the project provide water for wildlife? Explain: (15 pts possible)

- 5) Will the project provide necessary water for all species during severe drought? Explain: (20 pts possible)

- 6) Will matching dollars from local, state, or federal cost share programs be used to help fund the project? Explain: (20 pts possible)

- 7) Other benefits? Explain: (bonus of 15 pts possible)

PRIORITY SCORING FOR SOLAR POWER WATER DEVELOPMENTS

The maximum amount of funds to be allocated from this initiative for a single system is \$8,500 which will include a solar or wind powered water pump and technical assistance for installation. Final selections must be completed for the first phase by April 22, 2005 and selections for the second phase by June 10, 2005. At least 2 producers may be selected per county and up to 4 producers may be selected in larger counties with a large number of quality applications.

Conservation District or if in a multi-district county please list the districts involved in the selection:

County located in: _____

WACD Area: _____

District(s) contact person(s): _____

Name of producer (applicant): _____

Date producer submitted application: _____

Producer Address: _____

City: _____ State: _____ Zip Code: _____

Phone number: _____ Email: _____

Funding Criteria:

Ranking of proposals should be based upon review of the producer questionnaire and/or upon interviewing the producer. Producer must be willing to host demonstration tours for a 2 year period to showcase their working system and provide in-kind match to complete the project. Scoring is based on the greatest number of points with 115 being the highest possible score.

1. Provides for improved livestock distribution.....15(pts possible)_____
2. Provides livestock water that will reduce riparian grazing.....15 (pts possible)_____
3. Water development is part of a planned grazing system.....15 (pts possible)_____
4. Provides water for wildlife.....15 (pts possible)_____
5. Will provide necessary water during severe drought.....20 (pts possible)_____
- (For all identified species)
6. Matching funds(Farm Bill programs, 319 dollars, etc).....20 (pts possible)_____
7. Other benefits (bonus).....15 (pts possible)_____
- Explain:_____

Total score_____

Final selections should be submitted to Dr. Sadrul Ula, Governor's Energy Advisor, 200 West 24th Street, 124 State Capitol, Cheyenne, Wyoming 82002 by the above deadline.